REQUEST FOR PROPOSAL
MORROW ISLAND DISTRIBUTION SYSTEM
FISH SCREEN PROJECT
September 19, 2000

INTRODUCTION

A proposal is requested for the design, construction, and maintenance of fish screens and related hydraulic facilities associated with the Morrow Island Distribution System in the Suisun Marsh.

BACKGROUND

The Morrow Island Distribution System (MIDS) is located in the western Suisun Marsh, as illustrated in Figure 1. The MIDS consists of two hydraulically connected canals and extends eastward from Goodyear Slough to Suisun Slough and Grizzly Bay, as shown in Figure 2. The system includes an intake structure on Goodyear Slough and two outfall structures. One outfall structure is at the end of the M-Line canal on Suisun Slough. The other outfall is at the end of the C-Line canal at Grizzly Bay.

The U.S. Army Corps of Engineers (USACE) issued Permit No. 20698N, July 2, 1997, for maintenance of the MIDS. Permit conditions require installation of a fish screen on the Goodyear Slough intake to the MIDS. The Department of Water Resources (Department) and the United States Bureau of Reclamation developed a plan for screening the MIDS intake after consultation with the U.S. Fish and Wildlife Service and USACE. The plan calls for the installation of the following:

- 2, 12-foot conical screens and 1, 48-inch drain at the MIDS intake;
- 5, 12-foot conical screens distributed along Goodyear and Suisun Sloughs;
- 1, 36-inch *combination* turnout *and drain* along the C-Line canal of the MIDS; and,
- 1, 36-inch combination turnout and drain along the M-Line canal of the MIDS.

The plan also includes development of a new operations agreement for the MIDS.

The two conical screens to be installed at the MIDS intake will supply screened water through the MIDS to a portion of the Morrow Island Land Company (MILCO) property, a portion of the Mulberry Land Company (MLC) property, and

the entire Friendly Godfather (FG) property. The five remaining conical screens will be installed at various locations along Goodyear Slough and Suisun Slough to provide screened water directly to portions of the MILCO and MLC properties without the water passing through the MIDS. The proposed locations of all the conical screens are illustrated in Figure 3.

The total volume of screened flow to be provided by the 7 planned screens approximately equals the volume of flow that would have otherwise been provided by a single, centralized screen facility at the MIDS intake. The use of five of the seven planned screens to provide water directly to the MILCO and MLC properties offers several advantages over installing the entire screen capacity at the MIDS intake. These advantages include reduced sedimentation of the MIDS; increased operational flexibility for managed wetlands, and reduced environmental impact.

Additional information concerning the rational and justification for the proposed screens, as well as a general description of screen construction activities, is contained in “Environmental Impacts Analysis for the Proposed Morrow Island Distribution System Fish Screen Installation, September 2000.”

PROJECT DEFINITION

The “Project”, for the purposes of this RFP, is divided into two elements. Element One, hereafter referred to as the "Distributed Screen Element", entails the design, construction permitting, environmental permitting, construction, operations support, operations monitoring, routine maintenance, and routine repair of the 5 conical fish screens not connected to the MIDS. Element Two, hereafter referred to as the MIDS Element, entails the design, construction permitting, operations monitoring, routine maintenance, and routine repair of the following MIDS facilities:

- 2, 12-foot conical screens and 1, 48-inch drain at the MIDS intake;
- 1, 36-inch *combination* turnout *and drain* along the C-Line canal of the MIDS; and,
- 1, 36-inch combination turnout and drain along M-Line canal of the MIDS.

The MIDS Element is considered optional at this time for the purposes of this RFP. The MIDS Element, if approved, would be undertaken **in addition** to the Distributed Screen Element. **The proposal submitted in response to this RFP shall present planned efforts, expected costs, and schedules for the MIDS Element separately from efforts and resources identified for the Distributed Screen Element.**

FACILITY DESIGN, SPECIFICATIONS, AND REQUIREMENTS

The proposal shall specify efforts and costs for the design of the fish screen facilities and related hydraulic facilities, including any field surveys that may be

necessary to support design efforts. Facility specifications and requirements are listed below.

USACE Fish Screen Design Specifications

Fish screens constructed under the Distributed Screen Element and MIDS Element shall meet the following specifications, as specified in the USACE permit:

- Maximum approach velocity of 0.2 feet per second measured at a distance of 3 inches “upstream” of the screen face;

- Maximum mesh opening no larger than 3/32-inch for rectangular wedge wire or 5/32-inch for perforated or woven mesh materials; and,

- No entrainment of fish larger than one-inch in length, including juvenile salmonids, striped bass, and delta smelt.

Additional Fish Screen Facility Requirements for both Project Elements

- Each screen facility shall have a flow capacity of at least 25 cubic feet per second (CFS). USACE design criteria listed earlier shall be met at the maximum flow capacity. The screens shall have active or passive flow control systems to ensure that screen approach velocities do not exceed USACE limits.

- The screens and all appurtenant submerged metallic components shall be constructed of stainless steel and/or copper-nickel alloy so as to be as resistant as possible to corrosion from marsh waters. Cathodic protection shall be provided for each screen facility as a further means to control corrosion.

- The screens shall be conical in shape so as to provide an optimal amount of submerged screen area given limited available submergence depths, the need for visually unobtrusive screen facilities, and shallow channel depths in the marsh. The screens shall have a maximum outside diameter of approximately 12 feet; not including support structures, piping, and other appurtenant features.

- Each screen shall have a support structure capable of holding the screen in place during all foreseeable tide and flow conditions. The support structure shall include walkways, as needed.

- Each screen shall have a reliable automatic cleaning system to keep the screen free of debris and prevent it from fouling. Areas where the screens are

to be installed can have significant amounts of floating debris and plant matter. The cleaning system shall consist of powered rotating brushes.

- Screen cleaning and control systems shall be powered using commercial power at sites MB-1, MB-2, MI-1, MI-2, and the MIDS intake. No commercial power is available near site MI-3. Therefore, the screen cleaning system at site MI-3 shall be powered using photoelectric cells and storage batteries. Each screen cleaning system shall be capable of being powered using a portable or on-site backup energy system. The locations of the screen sites discussed above are shown in Figure 3.

- Facility support structures, valves, and appurtenant fixtures, shall be corrosion resistant if such are to be constructed of metal, or have metallic components. Facility support structures and appurtenant fixtures shall be rot-resistant if they are to be constructed of wood, or wood products. All treated wood or wood products used for, or in the construction of screen facilities shall be acceptable to the California Department of Fish and Game for use in wetlands. No creosote or coal-tar treated lumber shall be used for, or in the construction of the facilities. All synthetic polymer material (plastics) used in the construction of the facilities shall be resistant to photodegredation where such materials could be exposed to sunlight.

- All facilities shall be designed to operate in all foreseeable weather conditions.

- The screens, their support structures, and other appurtenant features, such as walkways, shall be protected from boats and navigation. Protection measures shall include marker lights, buoys, guard posts, and/or boat fenders, were needed.

- Water passing through each screen shall be discharged through a pipe constructed of high-density polyethylene or other suitable synthetic polymer. The pipes shall be no less than 30 inches in internal diameter and capable of conveying at least 25 CFS of flow from the screen without significant hydraulic energy loss. The working hydraulic efficiency of the pipes shall be sufficient to prevent them from causing a “backpressure” condition that could prevent the screens from attaining the design maximum flow rate, whenever possible.

  Each discharge pipe shall be permanently buried in, and pass through the levee adjoining each screen. The pipe shall be placed and, *if necessary,* reinforced within each levee so as to withstand collapse pressures generated by levee crown traffic, up to and including semitruck-trailers.

- Each screen shall be fitted with flow controls. Such controls shall include, but not be limited to:

- automatic or passive controls to ensure that maximum screen flowthough can be achieved without exceeding USACE fish protection velocity standards;
- valves to completely stop flow from passing through the screen and discharge pipeline; and,
- automatic backflow or check valves to prevent uncontrolled backflow (drainage).

All automatic flow controls and valves shall have manual override controls.

- The screens shall be designed and constructed to allow remote monitoring from the offices of the Suisun Resource Conservation District. The monitoring systems shall include an alarm for emergency notification of screen malfunction or failure.

- The screen structures shall be designed and constructed so as to prevent unscreened water movement through the structures, regardless of water levels at the screen intake or screen discharge point.

- The screens shall be readily removable from the water by a truck-mounted boom crane. The screen at site MI-3 may require the use of a barge-mounted crane due to the presence of tidal fringe at the site. Periodic removal of each screen will be necessary for cleaning, maintenance, repair, and dry storage.

- Each screen site shall include a screen laydown pad to support the screen while out of water for cleaning, maintenance, repair, or dry storage.

- Motors, electrical junctions, electrical control units, and any other features of the screens that could be damaged or rendered inoperable by immersion in water, shall be designed and constructed so as to be above the adjoining levee crown elevation, or such features shall be placed in watertight enclosures to prevent damage by flooding.

- Vandalism protection and prevention of unauthorized facility operation shall be included in the facility designs.

- Material excavated during facility construction shall be stockpiled on the crown of levees, or on levee roadways or shoulders a short distance from the various construction sites. Such material may be stockpiled at an alternate location approved in advance by the Department.

- Any surplus excavated material that cannot be returned to its source excavation shall be properly disposed of at a site away from the Suisun Marsh.

- All dredged material removed from sloughs, waterways, wetlands, and impoundment's shall be properly handled and transported so as not to cause impairment of water quality or filling of wetlands. All dredged material shall be properly disposed of at a location away from the Suisun Marsh.

- All installed wood pilings shall be fitted with piling caps.

- All construction vehicles, equipment, and machinery shall be restricted to roadways and areas delineated for construction. All construction vehicles, equipment, and machinery shall be free of significant oil leaks. On-site project monitoring staff will check for adherence to this requirement and, if necessary, require vehicles, equipment, or machinery to be removed immediately from the Project site. Proper oil spill clean-up equipment and supplies shall be available at all times during Project construction.

- All facilities to be constructed shall be as visually unobtrusive as possible so as to preserve the natural aesthetics of water channels and adjoining wetlands. The silhouette and footprint of each screen facility shall be minimized to the extent possible. All painted or otherwise colored facilities within view shall be of a color, or combination of colors, that are compatible with the natural landscape adjacent to the facilities.

- Screen laydown pads, electrical control units, valve controls, and other screen features shall, to the extent possible, be located in "upland" areas to minimize impacts to wetlands.

- Best Management Practices shall be instituted for all facility construction activities to help prevent erosion and sedimentation. Erosion and sedimentation control measures, including revegetation, shall also be used to control erosion and sedimentation in disturbed areas after construction operations have been completed.

- *Existing roadways on the MILCO property shall be upgraded to the extend necessary to adequately support the movement and operation of equipment and vehicles for the construction, repair, and maintenance of fish screens at sites MI-1, MI-2 and, MI-3. Construction activity related damage to any roadways on MILCO, MLC, and FG properties, as well as damage to MIDS roadways as the result of facility construction, shall be repaired.*

Additional Fish Screen Facility Requirements Only for the "Distributed Screen Element"

- Screen design criteria for the five screens not connected to the MIDS shall meet the operational requirements of water management plans for the MILCO and MLC properties.

- A flow diversion structure, such as an orifice box and isolation berm, or other means of diversion, shall be installed at the point of discharge from the screen at site MI-3. The flow diversion structure shall be constructed within the existing ditch located just inland of the levee at site MI-3. The purpose of the flow diversion structure is to selectively direct the discharge from the screen at site MI-3 to various areas of the MILCO property using the existing ditch.

  The flow diversion structure shall be designed and constructed so as to not produce significant hydraulic energy loss while the screen at MI-3 is operating. The hydraulic efficiency of the flow diversion structure shall be sufficient to prevent it from causing a "back pressure" condition that could prevent the screen at site MI-3 from attaining the design maximum flow rate whenever possible.

  Modification of the bottom or side berms of the existing ditch shall be completed if such is necessary to ensure that the ditch can properly convey water from the screen to adjoining areas. Any existing culverts within the ditch that are not of sufficient diameter to properly convey screened water through the ditch system shall be replaced with larger diameter culverts, as needed.

Additional Fish Screen Facility and Related Hydraulic Facility Requirements Only for the MIDS Element

- A headwall shall be constructed on the Goodyear Slough side of the MIDS intake, as depicted in Figure 3. The purpose of the headwall is to allow the two intake screens to be placed as far east as possible to prevent or minimize interference with boat traffic in the channel adjoining the screens.

  The headwall shall be approximately 40 feet in length and shall be constructed using vinyl sheet piling. The head wall shall extend a sufficient distance to provide space for two, 12-foot diameter conical screens currently planned for installation at the MIDS intake.

  The headwall shall be constructed along the western edge of the gravel roadway that crosses the current intake structure. Wingwalls shall be constructed at both ends of the headwall for slope transition.

- The two conical screens at the MIDS intake shall be positioned so as to allow room for the possible addition of a third intake screen sometime in the future. The proposal submitted in response to this RFP shall not include the installation of a third screen at the intake.

- Support pilings for the two fish screens at the MIDS intake facility shall, to the extent possible be shared between the two screens. Such sharing could

reduce the total number of pilings required for support of the two intake screens and reduce the overall footprint of the screen facility.

- A debris/bumper boom and debris/bumper boom support piles shall be installed in Goodyear Slough at the MIDS intake facility. The main purpose of the boom is to prevent large accumulations of floating debris in Goodyear Slough from fouling the MIDS intake screens. A secondary purpose is to provide a protective barrier for boat traffic.

- A 48-inch drain shall be installed at the MIDS intake, as depicted in Figure 3. The drain shall be constructed of high-density polyethylene or other suitable synthetic polymer. The drain shall be fitted with a manually-operated combination gate and flap valve on the end that extends into Goodyear Slough. The drain shall be fitted with a manually-operated gate valve on the end that extends into the MIDS.

  The drain shall be permanently buried in the levee separating Goodyear Slough from the MIDS. The drain shall be placed so as to have no slope and so that its lower internal invert is at –6.0ft. NGVD 29.

- Screen facility demolition at the MIDS intake shall begin with the demolition and removal of the existing intake facility. *Demolition materials such as culverts, valves, wood, and concrete shall be removed from the Suisun Marsh and properly disposed of, or recycled.*

  If needed, a coffer dam, or its equivalent, shall be installed along the bank of Goodyear Slough to facilitate construction activities. Water levels within the MIDS will be lowered as much as possible by the Department using the MIDS's existing gravity drain system prior to intake demolition and removal operations. Additional lowering of system water levels and/or hydraulic isolation of the intake facility from the MIDS during demolition and construction shall be the responsibility of the construction contractor.

  The structural and hydraulic integrity of the levee at the MIDS intake shall be reestablished following the completion of intake demolition activities, installation of discharge pipes for the two screens and, installation of the 48-inch diameter drain pipe. Permanent traffic barriers, rails, posts, reflective markers and signage shall be installed on the levee crown to help prevent damage to intake facilities from traffic, and to protect the safety of motorists.

  Rock revetment shall be placed on the inside slope of the MIDS intake levee from the toe of the levee to the break-in-slope at the levee crow, as illustrated in Figure 3. The purpose of the revetment is to prevent erosion. No serpentinite, broken concrete, or broken asphalt shall be used for revetment.

- Screen laydown pads for the MIDS intake screens shall be located approximately 20 feet north of the proposed intake structure along the

existing levee road, as illustrated in Figure 3. Each platform shall be approximately 16-feet square and elevated to about 2 feet off the ground. Wood pilings or pre-cast concrete piers shall be used to support each platform.

- A thirty-six inch diameter combination turnout/drain shall be installed along the M-Line canal *and along the C-Line canal of the MIDS*, as illustrated in Figure 3. The purpose of the combination turnout/drains is to improve the conveyance of water from the MIDS to the *MLC and FG* properties, and to improve drainage from the properties to the MIDS. The combination turnout/drains shall be fitted with a manually-operated combination lift/flap gate valve on each end to allow use for draining and filling.

- All turnout and drain pipes placed within the levees of the MIDS shall be constructed of high-density polyethylene or other suitable synthetic polymer. The pipes shall be placed and, *if necessary,* reinforced within the levees so as to withstand collapse pressures generated by levee crown traffic, up to and including, semitruck-trailers.

- Walkways shall be constructed for access to all manually-operated valves installed for MIDS facilities.

- All gate valves and combination gate/flap valves installed for MIDS facilities shall be corrosion resistant and shall be suitable for use in brackish water.

- Screen design criteria for the two conical screens to be connected the MIDS shall meet the operational requirements of the revised MIDS Operations Agreement. The MIDS Operations Agreement is currently under revision.

- The levee crown of the MIDS shall be regraded to an elevation of +5.0 ft. NGVD 29 at the MIDS intake and at the M-Line and C-Line turnouts/drains after facility installation. Road base material or gravel shall be placed and compacted on the levee crown to reestablish the roadway to preexisting conditions. The thickness and composition of the new road base material shall be consistent with the preexisting road material. No serpentinite rock or concrete washout shall be used for road material. Road material shall be of a texture and composition such that dust generation potential will be minimized to the extent possible.

- The construction contractor's staging area for construction of MIDS facilities shall be located on Morrow Island Road adjacent to the existing intake facility. All equipment and material storage will be restricted to the levee areas only and will be prohibited from wetland areas.

PROJECT COORDINATION

Project activities shall be closely coordinated with representatives of MILCO, MLC, FG, and the Department. Such coordination activities shall include, but not be limited to:

- A pre-design meeting to discuss efforts to be undertaken for screen facility design and to allow MILCO, MLC, FG, and Department representatives an opportunity to provide initial design input;

- Post-preliminary and post-final design meetings to update MILCO, MLC, FG, and Department representatives on the facility designs and to provide an opportunity for input; and,

- Pre-construction meeting to describe planned construction activities and to provide coordination between the construction contractor and MILCO, MLC, FG, and Department representatives.

Project coordination activities shall be included in the proposal submitted in response to this RFP.

MIDS FACILITY DESIGN APPROVAL

The final design of all facilities shall be approved by the Department prior to construction.

SCREEN FACILITY WARRANTY

Workmanship, materials, and proper function of the screen facilities shall be warranted for at least one year following as-built approval by the Department.

PERMITTING

The proposal submitted in response to this RFP shall include acquisition of all construction permits and clearances, as well as all anticipated measures associated with adherence to construction permits and clearances for both project elements.

The proposal shall not include efforts for documentation and compliance with the California Environmental Quality Act (CEQA). The Department will provide for Project CEQA compliance.

The proposal shall not include efforts for obtaining right-of-entry and encroachment permits for construction of the various facilities. The Department will acquire such permits.

Distributed Screen Element

It shall be assumed for the purposes of the proposal submitted in response to this RFP that construction, operation, and maintenance of the five distributed fish screen facilities will be covered under the current USACE Regional General Permit (RGP) for managed wetlands in the Suisun Marsh. The Suisun Resource Conservation District (SRCD) shall be responsible for seeing that all construction and maintenance activities for these screen facilities are in compliance with the RGP. The Department will monitor/review all activities to help ensure compliance with the RGP.

The proposal shall not include the acquisition of environmental permits, clearances, or waivers that may be required in addition to the RGP for the five distributed fish screens. The Department will acquire such permits, clearances, and waivers. The Department will perform construction site inspections before and during construction activities for the presence of sensitive or endangered species. The inspections are necessary to fulfill the requirements of the Endangered Species Act and to monitor adherence with environmental permit requirements.

MIDS Element

It shall be assumed for the purposes of the proposal that the Department will acquire all necessary environmental permits, clearances, or waivers for the construction of fish screens and related hydraulic facilities on the MIDS. The Department will perform construction site inspections before and during construction activities to monitor environmental permit compliance and adherence to entry and encroachment limitations.

CONSTRUCTION

The proposal shall specify what efforts will be required for the construction of the various facilities by October 1, 2001. The proposal shall also address logistic concerns related to construction activities and the use/closure of roads.

CONSTRUCTION INSPECTION

All construction activities on MILCO, MLC and FG properties shall be open for observation by MILCO, MLC, FG, and Department representatives. All construction activities shall be subject to the inspection and approval of a designated representative of the Suisun Resource Conservation District (SRCD) and the Department.

OPERATIONS MONITORING

The proposal shall include monitoring of fish screen facility operations and conditions to ensure proper function and to determine when facility repair, modification, and special maintenance operations are required.

OPERATIONS SUPPORT

The proposal shall include technical support and consultation services to assist representatives of MILCO, MLC, and the Department in the day-to-day operation of the screen facilities.

ROUTINE MAINTENANCE AND REPAIR

An appropriate interval and methodology for screen cleaning shall be developed as part of the Project. The cleaning interval and methodology must be adequate so that design flows can be attained and approach velocity limitations can be met. The proposal shall specify requirements for development of screen cleaning intervals and methodologies as well as describe anticipated routine maintenance and repair requirements.

PROPOSAL ORGANIZATION AND CONTENT

The proposal shall be divided into at least the following sections:

Project Management/Oversight
Project Coordination
Facility Design
Permitting
Construction
Operations Support
Operations Monitoring
Routine Maintenance and Repair

Each section shall provide a description of proposed efforts, a time schedule for their completion, and a detailed breakdown of costs. Cost breakdowns shall include itemized labor, travel and per diem, equipment and materials costs, including any cost contingencies. Key personnel necessary for the completion of efforts described in the proposal shall also be identified. The proposal shall include timelines and graphically depicted schedules to illustrate the timing of individual project tasks.

POINT OF CONTACT

The "Point of Contact" regarding this RFP is:

Kamyar Guivetchi; Program Manager, Suisun Marsh Branch
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Environmental Services Office
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Sacramento, CA 95816-7017

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All inquiries regarding this RFP should be directed to Mr. Guivetchi or his designee.

SITE ORIENTATION

A site orientation or "walkthrough" shall be conducted by the Department on request. The request for the walkthrough must be made at least 3 business days in advance of the walkthrough. The purpose of the walkthrough is to view the locations of each facility addressed in this RFP.

PROPOSAL DELIVERY DEADLINE

The proposal shall be delivered to the offices of the Point of Contact no later than the close of business October 31, 2000. The Department may, on request, grant an extension to the deadline.

PROVISIONS

Provisions for this RFP, and the submission of any proposal in response to this RFP, are:

1. The Department reserves the right to reject, accept, modify, or cancel, any part or all of this RFP.

2. The Department reserves the right to reject any proposal, in whole or in part.

3. Nothing in this RFP requires that any contract be awarded or any agreement be entered into.

4. The Department is not responsible for any costs relating to preparation or transmittal of any proposal developed in response to this RFP.

5. All materials submitted in response to this RFP will become State property.

6. The Department may waive minor deviations and omissions from requirements set forth in this RFP.

7. The Department may amend any part of this RFP up to the date that the proposal is due.